

## REMARKS/ARGUMENTS

In the Office Action of September 21, 2009, claims 1-20 are rejected. Additionally, the drawings are objected to. However, Applicants hereby request reconsideration of the application in view of the below-provided remarks.

### Objections to the Drawings

The drawings are objected to as allegedly lacking descriptive labels. In particular, the Office Action states that the drawings are objected to under 37 C.F.R. 1.83(a) because they fail to show textual descriptions of drawing elements in Figs. 1, 3 and 4 as described in the specification. The current application is a U.S. National Stage application. The labeling of figures with text matter is prohibited under PCT Rule 11.11, except when absolutely indispensable for understanding. Further, MPEP 1893.03(f) states that “[t]he USPTO may not impose requirements beyond those imposed by the Patent Cooperation Treaty (e.g., PCT Rule 11).” In the present application, Applicants submit that the addition of text labels to the drawings is not “absolutely indispensable” because the individual drawing elements are identified and described in the specification. In view of the above rules, Applicants respectfully assert that text labeling is not required in the drawings of the current application. Thus, Applicants hereby request that the objections to the drawings be withdrawn.

### Claim Rejections under 35 U.S.C. 103

Claims 1-4 and 10-17 are rejected under 35 U.S.C. 103(a) allegedly being unpatentable over Kim (WO 00/77961) in view of Vanderperren et al. (U.S. Pat. No. 7,286,617, hereinafter “Vanderperren”). Claims 5, 6, 9 and 20 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Kim in view of Vanderperren and further in view of Ward (U.S. Pat. No. 6,754,170). Claims 7, 8, 18, and 19 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Kim in view of Vanderperren and Ward, and further in view of Mizoghuchi et al. (EP 1,071,251, hereinafter “Mizoghuchi”). However, Applicants respectfully submit that the pending claims are patentable over the cited references for the reasons provided below.

### Independent Claim 1

Applicants respectfully assert that the teachings of Kim in view of Vanderperren are not sufficient to render claim 1 prima facie obvious. In particular, Applicants respectfully assert that Kim in view of Vanderperren does not teach that “*a first part (23) for performing a coarse time synchronisation and a second part (24) for performing a fine time synchronisation, wherein the first part comprises an autocorrelating unit for autocorrelating samples of a group of preamble symbols (t1,t2,t3), wherein the second part comprises a crosscorrelating unit for crosscorrelating samples of a further group of preamble symbols (t10,G1) with predefined samples, and the result of the autocorrelating the samples of the group of preamble symbols by the autocorrelating unit is not used by the crosscorrelating unit for the crosscorrelating the samples of the further group of preamble symbols with the predefined samples*” (emphasis added), as recited in claim 1.

The Office Action admits that Kim does not teach the above-identified limitation of claim 1, but alleges that Vanderperren teaches the above-identified limitation of claim 1. (See page 4 of the Office Action). However, Applicants respectfully assert that Vanderperren does not teach the above-identified limitation of claim 1. As a result, Applicants respectfully assert that the teachings of Kim in view of Vanderperren are not sufficient to render claim 1 prima facie obvious.

Firstly, Applicants respectfully assert that Vanderperren does not teach “*a first part (23) for performing a coarse time synchronisation and a second part (24) for performing a fine time synchronisation, wherein the first part comprises an autocorrelating unit for autocorrelating samples of a group of preamble symbols (t1,t2,t3),*” (emphasis added), as recited in claim 1. In particular, the Office Action suggests that a rough symbol timing circuit (31) in Fig. 9b of Vanderperren is equivalent to the “*first part (23) for performing a coarse time synchronisation*” recited in claim 1. (See page 4 of the Office Action). However, Applicants respectfully assert that the rough symbol timing circuit (31) in Fig. 9b of Vanderperren is not equivalent to the “*first part (23) for performing a coarse time synchronisation*” recited in claim 1. Vanderperren teaches that the rough symbol timing circuit (31) includes memory (37), a comparator (36), a buffer (34), and a rough symbol timing determination circuit (35). (See Fig. 9b and column 15, lines 27-55 of Vanderperren). However, Vanderperren is silent on the

rough symbol timing circuit (31) including “an autocorrelating unit for autocorrelating samples of a group of preamble symbols,” (emphasis added), as recited in claim 1. As a result, Applicants respectfully assert that the rough symbol timing circuit (31) in Fig. 9b of Vanderperren is not equivalent to the “*first part (23) for performing a coarse time synchronisation*” in claim 1. Thus, Applicants respectfully assert that Vanderperren does not teach “*a first part (23) for performing a coarse time synchronisation and a second part (24) for performing a fine time synchronisation, wherein the first part comprises an autocorrelating unit for autocorrelating samples of a group of preamble symbols (t1,t2,t3)*,” (emphasis added), as recited in claim 1.

Secondly, Applicants respectfully assert that Vanderperren also does not teach “*the result of the autocorrelating the samples of the group of preamble symbols by the autocorrelating unit is not used by the crosscorrelating unit for the crosscorrelating the samples of the further group of preamble symbols with the predefined samples*,” (emphasis added), as recited in claim 1. Vanderperren teaches that a timing and frequency synchronization unit (5) includes an autocorrelation unit (16), a frequency offset estimation unit (17), a frequency offset compensation unit (18) and a cross-correlator unit (19). (See Fig. 3, the paragraph between column 7, line 58 and column 8, line 3 and column 8, lines 4-16 of Vanderperren). In particular, Vanderperren teaches that an estimate frequency offset is extracted in the frequency offset unit (17) using the result of the autocorrelation unit (16). (See Fig. 3, column 8, lines 4-16 and column 9, lines 39-42 of Vanderperren). Vanderperren also teaches that the extracted estimate frequency offset is used by the frequency offset compensator (18) to correct samples for cross-correlation in the cross-correlator unit (19). (See Fig. 3 and column 12, lines 14-18 of Vanderperren). That is, the cross-correlator unit (19) performs cross-correlation using the result of the autocorrelation unit (16). Because Vanderperren teaches that the cross-correlator unit (19) performs cross-correlation using the result of the autocorrelation unit (16), Applicants respectfully assert that Vanderperren does not teach that the result of autocorrelation by the autocorrelation unit (16) is not used by the cross-correlator unit (19) for the cross-correlation. Thus, Applicants respectfully assert that that Vanderperren does not teach “*the result of the autocorrelating the samples of the group of preamble symbols by the autocorrelating unit is not used by the crosscorrelating unit for the*

*crosscorrelating the samples of the further group of preamble symbols with the predefined samples,”* (emphasis added), as recited in claim 1.

In view of the above-provided arguments, Applicants respectfully assert that Kim in view of Vanderperren does not teach the above-identified limitation of claim 1. Because Kim in view of Vanderperren does not teach all of the limitations of claim 1, Applicants respectfully assert that the teachings of Kim in view of Vanderperren are not sufficient to render claim 1 *prima facie* obvious.

Additionally, even assuming that Vanderperren teaches the above-identified limitation of claim 1, Applicants respectfully assert claim 1 is not obvious over Kim in view of Vanderperren because the proposed modification of Kim in view of Vanderperren would change the principle of operation of Kim. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (see MPEP §2143.01 (VI)).

Kim teaches an autocorrelation unit (21), a frequency synchronization unit (22), a frequency offset compensation unit (23) and a cross-correlation unit (24). (See Fig. 2 and page 5, lines 18-29 of Kim). In particular, Kim teaches that the autocorrelation unit (21) outputs a normalized autocorrelated value and that the frequency synchronization unit (22) obtains a frequency offset value based on the normalized autocorrelated value from the autocorrelation unit (21). (See Fig. 3, steps 304-312, the description between page 6, line 18 and page 7, line 24 of Kim). Kim further teaches that the frequency offset compensation unit (23) performs frequency offset compensation on a received signal using the frequency offset value to generate a frequency offset-compensated signal. (See Fig. 3, step 316 and page 7, lines 28-30 of Kim). Kim further teaches that the cross-correlation unit (24) performs cross-correlation using the frequency offset-compensated signal and a reference signal. (See Fig. 3, step 318 and page 7, lines 8-11 of Kim). Consequently, the cross-correlation unit (24) performs cross-correlation using the result of the autocorrelation unit (21). Thus, the principle of operation of Kim involves performing cross-correlation by the cross-correlation unit (24) using the result of autocorrelation by the autocorrelation unit (21).

Therefore, even assuming that Vanderperren teaches performing cross-correlation without using the result of autocorrelation, the proposed modification of Kim in view of Vanderperren would involve performing cross-correlation without the result of autocorrelation. Because the proposed modification of Kim in view of Vanderperren would involve performing cross-correlation without the result of autocorrelation and the principle of operation of Kim involves performing cross-correlation using the result of autocorrelation, the proposed modification of Kim in view of Vanderperren would change the principle of operation of Kim. As a result, Applicants respectfully assert that the teachings of Kim in view of Vanderperren are not sufficient to render claim 1 prima facie obvious.

#### Dependent Claims 2-9 and 14-20

Claims 2-9 and 14-20 depend from and incorporate all of the limitations of independent claim 1. Thus, Applicants respectfully assert that claims 2-9 and 14-20 are allowable at least based on an allowable claim 1.

#### Independent Claims 10-13

Claims 10-13 includes similar limitations to claim 1. Because of the similarities between claims 10-13 and claim 1, Applicants respectfully assert that the remarks provided above with regard to claim 1 apply also to claims 10-13. Accordingly, Applicants respectfully assert that the teachings of Kim in view of Vanderperren are not sufficient to render claims 10-13 prima facie obvious.

## CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,

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